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EXAMINER

GENACK, MATTHEW W

ART UNIT

PAPER NUMBER

2645

DATE MAILED: 12/02/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/941,745

Applicant(s)

GREVERIE ET AL.

Examiner

Matthew W. Genack

Art Unit

2645

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3 and 5-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3 and 5-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3, and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inamori *et. al.*, U.S. Patent No. 6,337,974, in view of Wyse, U.S. Patent No. 6,230,001, further in view of Beaucourt *et. al.*, U.S. Patent No. 5,446,463.

Regarding Claims 1, 3, and 7, Inamori *et. al.* discloses a method and apparatus for achieving linear gain control over a wide range using a single control voltage in a cellular mobile telephone terminal (Abstract). The cellular mobile telephone terminal comprises a power amplifier, said power amplifier receiving an input signal whose power level is varied by a gain controller stage, and a gain control voltage associated with the power amplifier is varied by means of a control loop (Column 10 Lines 10-18, Fig. 1). The output power level of the power amplifier is detected by a control section (Column 10 Lines 32-47, Fig. 1). Inamori *et. al.* discloses the varying of the control voltage, for a given input voltage, to obtain the desired output voltage (Fig. 4).

Inamori *et. al.* does not expressly disclose that the power amplifier is of the heterojunction bipolar transistor variety, nor does Inamori *et. al.* expressly disclose the use of a zero intermediate frequency architecture.

Wyse teaches that heterojunction bipolar transistor technology is useful in direct conversion, or homodyne receivers, wherein the RF signal is converted directly to baseband, or zero intermediate frequency (Column 1 Lines 22-36, Column 3 Lines 42-51, Fig. 2).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Inamori *et. al.* by implementing the cellular telephone transceiver with a zero intermediate frequency scheme with the use of a heterojunction bipolar transistor (HBT) power amplifier.

One of ordinary skill in the art would have been motivated to make this modification because of the advantages in balance, injection level, and conversion loss that are offered by receivers that use HBT technology (Wyse Column 1 Lines 24-32).

Neither Inamori *et. al.* nor Wyse disclose the practice of reducing the input power level to a power amplifier if said power amplifier's output power level falls below a predetermined limit value, nor does either disclose the operation of a power amplifier in a non-linear saturation region that is entered when the output power level exceeds an upper value.

Beaucourt *et. al.* teaches the use of limiters in conjunction with amplifiers so as to achieve a power transfer function that is linear in one region (below non-linear saturation), and perfectly horizontal in the other region (Column 1 Lines 24-38, Figs. 1 and 3). In this case, if the output power level is at its upper limit, and then falls below this limit, the input power is reduced, since the amplifier would be operating in the linear region.

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Inamori *et. al.* as modified by Wyse by providing for the reduction of input power when output power drops below a certain predetermined threshold and by providing for the maintenance of a constant input power and the varying of the control voltage when the amplifier is operating in the non-linear saturation region.

One of ordinary skill in the art would have been motivated to make this modification because of the increased efficiency that such a procedure would yield.

Regarding Claim 5, Inamori *et. al.* in view of Wyse discloses every limitation of Claims 3, upon which Claim 5 depends, as outlined above. Furthermore, Inamori *et. al.* teaches the use of variable gain pre-amplifiers cascaded with the input of power amplifiers in prior art cellular telephone transceiver designs (Column 2 Line 66 to Column 3 Line 4, Fig. 15).

Regarding Claim 6, Inamori *et. al.* in view of Wyse discloses every limitation of Claims 3, upon which Claim 6 depends, as outlined above. Furthermore, Inamori *et. al.* discloses the use of a variable attenuator in the gain controller stage as a means for varying the input power level of the power amplifier (Column 10 Lines 19-27, Fig. 1).

Response to Arguments

3. Applicant's arguments filed 31 August 2005 have been fully considered but they are not persuasive. The Applicant disagrees with the obviousness rejections of Claims 1 and 3, but fails to provide reasons for said disagreement. The Applicant also disagrees that Inamori *et. al.* and Wyse together disclose every limitation of original

versions of Claims 1 and 3, and likewise fails to provide reasons for said disagreement. Furthermore, in the context of the move of limitations from cancelled Claims 2 and 4 to Claims 1 and 3, respective, Applicant states "Beaucourt does not teach, or even suggest, at least Applicant's claim limitations (claims 1 and 3),

wherein, if said output power is less than said first predetermined limit value, said input power is reduced to a value causing said control voltage to be increased to a second predetermined value where the power amplifier has only a linear gain."

Examiner never maintained that Beaucourt *et. al.* disclosed the entirety of the aforementioned limitation, because the aforementioned limitation is only partially from Claims 2 and 4, the rest having been added to that which was moved from cancelled Claims 2 and 4 to Claims 1 and 3, respectively. In particular, Examiner directs Applicant's attention to the fact that the quoted limitation makes reference to the control voltage, which is not mentioned in the original versions of Claims 2 and 4.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew W. Genack whose telephone number is 571-272-7541. The examiner can normally be reached on FLEX.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on 571-272-7547. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Matthew Genack

Examiner

Art Unit 2645



23 November 2005

OVIDIO ESCALANTE
PATENT EXAMINER

